Technical Report 597

An Assessment of Job Satisfaction of Combat Arms Personnel During REALTRAIN Training

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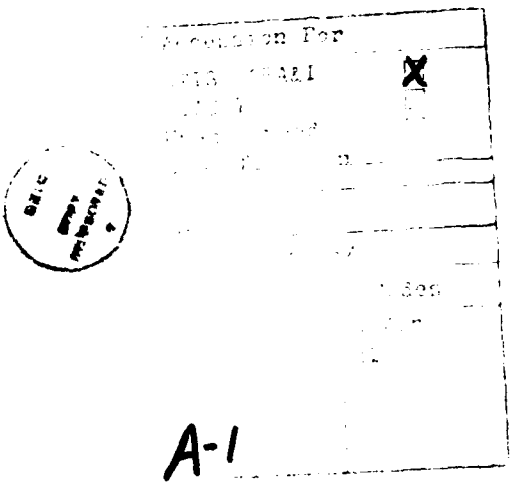

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This study isolated dimensions of job satisfaction and determined the relationship between job satisfaction and tactical performance in a REALTRAIN versus conventional tactical training environment. A job satisfaction questionnaire was administered before and after training to 187 male soldiers assigned to the 9th Infantry Division at Fort Carson, Colorado. The design was the pretest-posttest control group design with matched assignment to either REALTRAIN or

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20. ABSTRACT (continued)

conventional training. Factor analysis on 24 questionnaire items indicated four dimensions of job satisfaction: Unit Cohesiveness, Training Expectations, Work Satisfaction, and Career Intentions. In addition, a Leadership scale was constructed from four questionnaire items. Multivariate analysis of covariance and subsequent univariate analyses indicated that REALTRAIN was significantly better than conventional training on Unit Cohesiveness and Training Expectations, whereas conventional training was significantly better than REALTRAIN on Work Satisfaction and Career Intentions. The amount of variance accounted for, $\underline{\omega}^2$, indicated the first difference to be of moderate strength and the latter three to be of high strength. In addition, univariate analysis of covariance indicated that type of training did not significantly affect Leadership. Overall, REALTRAIN significantly improved tactical performance, attitudes toward training, and unit cohesion. However, REALTRAIN did not significantly improve attitudes toward career or work and therefore does not, in itself, appear to provide a basis for reducing combat arms personnel turnover.

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Human Performance in Field Assessment

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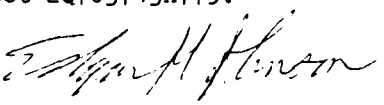
FOREWORD

The Presidio of Monterey Field Unit traditionally has solved a range of Army Training Systems Problems. The Engagement Simulation Systems Team of this unit performs research and development on the effectiveness of simulations for improving Combat Arms Training. In 1977 this team found the REALTRAIN method of Tactical Engagement Simulation, developed by ARI, to significantly improve Tactical Performance with rifle squads.

Although REALTRAIN significantly improves tactical performance within the Combat Arms, the retention rates for the Combat Arms personnel is significantly less than the U.S. Army as a whole. One possible reason for the poor retention of Combat Arms may be their failure to achieve job satisfaction.

This report uses ARI developed measures to compare the job satisfaction of Combat Arms Personnel participating in either REALTRAIN or conventional training in standard Army field exercises. The results indicated REALTRAIN to significantly improve attitudes on Unit Cohesiveness and Training Expectations but not on Work Satisfaction and Career Intentions. The research implies factors outside the workplace contribute to job dissatisfaction.

This research was conducted in conjunction with an experiment to validate REALTRAIN with the Combat Arms at the Platoon level conducted at Fort Carson, CO, June through March 1978 by the ARI Field Unit, Presidio of Monterey, CA, Engagement Simulation Team. The research program is responsive to the requirements of Army Projects 2Q763743A773 and 2Q763743A780 and the TRADOC TSM-TES of the U.S. Army Training Support Center, Fort Eustis, VA. The research reported here was conducted as part of Army Project 2Q763743A775.



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AN ASSESSMENT OF JOB SATISFACTION OF COMBAT ARMS PERSONNEL DURING REALTRAIN TRAINING

EXECUTIVE SUMMARY

Requirement:

To indicate dimensions of job satisfaction among Combat Arms personnel and to determine the relationship between job satisfaction and tactical performance in a REALTRAIN vs. conventional training environment.

Procedure:

One hundred eighty-seven combat arms personnel attached to Fort Carson, CO, were administered a pretraining posttraining job satisfaction questionnaire designed to measure Unit Cohesiveness, Training Expectations, Work Satisfaction, Career Intentions, and Leadership.

It was predicted that the REALTRAIN Training Group would indicate significantly greater increases in job satisfaction across all dimensions when compared to the conventional training group.

Findings:

Overall, REALTRAIN significantly improved Tactical Performance, job satisfaction, attitudes on Unit Cohesiveness, and Training Expectations. However, REALTRAIN did not significantly improve attitudes on Work Satisfaction and Career Intentions and therefore does not, in iteself, provide a solution to the Combat Arms retention problem.

Utilization of Findings:

This research implies there are factors outside the training arena that affect satisfaction and attrition. Models have been studied in industry and the military which indicate factors outside the workplace have effects on satisfaction and attrition.

These data support the idea that research with a comprehensive model of satisfaction studied under experimental conditions be continued within the Army, and in particular with the Combat Arms.

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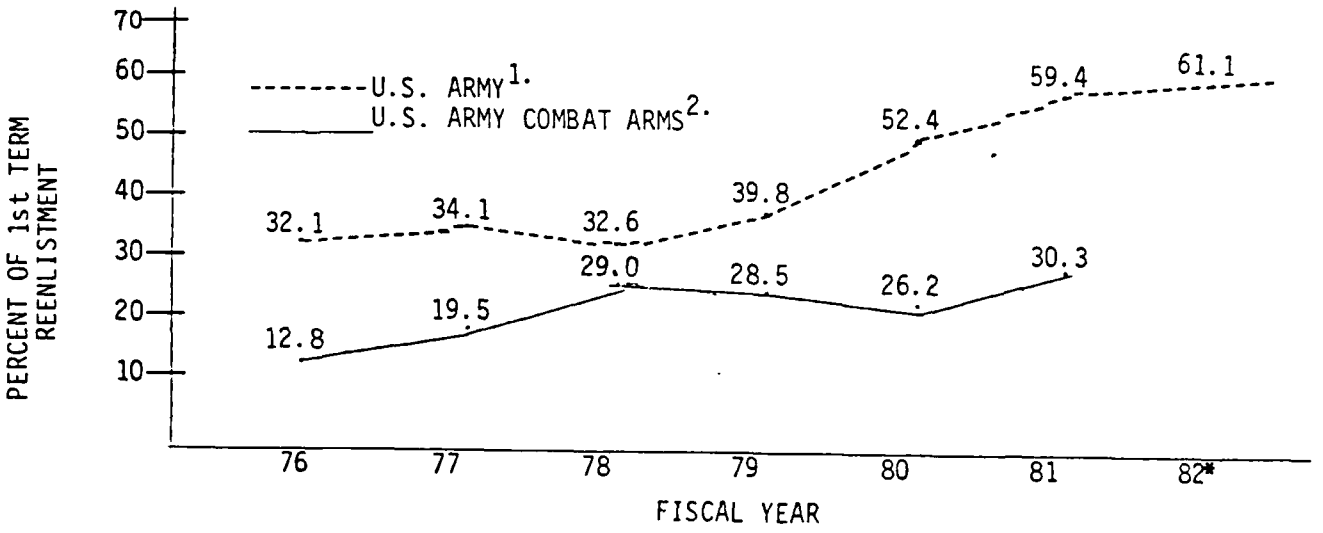
INTRODUCTION

Today's volunteer Army is facing a challenge in attempting to maintain prescribed manning levels within their combat arms divisions. The relevance of studying retention in the combat arms is reflected in the 1st term reenlistment rates.

Figure 1.

First Term Reenlistment Rates
for the U.S. Army and the U.S. Army Combat Arms



1. Data provided by U.S. DOD Manpower Management Information Division of the Washington Headquarters Services.

2. Data provided by the Defense Manpower Data Center (DMDC).

* Data for U.S. Army Combat Arms unavailable at this time.

Figure 1 indicates the 1st term reenlistment rates for the U.S. Army and the U.S. Army Combat Arms for the fiscal year 1976 to 1981. On average the percent of 1st term reenlistment of the combat arms is 45.1% of the 1st term reenlistment of the Army!

One reason that combat arms personnel are not being retained may be their failure to achieve job satisfaction given the kind of tactical training they are receiving. A review of the literature indicates that turnover in industrial settings consistently and unequivocally has been related to job satisfaction (Hulin, 1968; Taylor & Weiss, 1972; Waters & Roach, 1971).

In an effort to improve tactical training, Shriver, Mathers, Griffin, Jones, Word, Root, and Hayes (1975) developed a tactical training procedure called REALTRAIN I. This procedure was subsequently evaluated by Banks, Hardy, Scott, and Kress (1977), who demonstrated empirically that REALTRAIN I was more effective in terms of tactical performance than conventional training for combat arms units at the rifle squad level.

In conjunction with the Banks et al. study, Sulzen and Bleda (1979) administered an instrument designed to assess morale to these same combat arms personnel. Morale was considered to consist of dimensions that would reflect motivation and satisfaction. The results indicated that REALTRAIN significantly improved attitudes on four of six dimensions of motivation/satisfaction.

Only one additional study has dealt directly with the relationship between REALTRAIN and job satisfaction. Bleda and Hayes (1978) administered an instrument designed to assess morale components to 1200 combat arms personnel participating on either REALTRAIN training or conventional training. Morale was considered to consist of motivation, job satisfaction, and unit cohesiveness. The results revealed that REALTRAIN was significantly better than conventional training on the four dimensions of motivation, on two of the three dimensions of job satisfaction and on one of the two dimensions of unit cohesiveness.

The results of the two studies were open to question. Specifically, history and selection differences may have accounted for the significant effects attributed to REALTRAIN training. Thus, the Bleda and Hayes (1978) and the Sulzen and Bleda (1979) studies represented inconclusive evidence that REALTRAIN produced increased job satisfaction.

The purpose of the present study was to isolate dimensions of job satisfaction among combat arms personnel and to determine the relationship between job satisfaction and tactical performance in a REALTRAIN vs. conventional training environment using more rigorous experimental and statistical controls than were used in the previous studies.

The present study examined job satisfaction through a paper-and-pencil instrument. The instrument was designed to describe job satisfaction in terms of environmental determinants previously shown to correlate with satisfaction in industrial and military settings (Borman & Bleda, 1978; Motowidlo, Dowell, Hopp, Borman, Johnson & Dunnette, 1976; Woelfel & Savell, 1978). Examining job-related satisfaction by focusing on the environment as potential causes of feelings about the job situation was considered appropriate given the training context. The items of the instrument were subjected to a factor analysis to yield the dependent variables used in the analysis. These dimensions differ from the previous two studies in that they specifically describe job satisfaction as opposed to being part of a larger set of dimensions thought to describe morale.

It was predicted that those individuals in the REALTRAIN training group would indicate significantly greater increases in job satisfaction across all selected dimensions of job satisfaction when compared to the conventional training group.

METHOD

Subjects. The individuals who participated in this study were 187 male soldiers assigned to the 4th Infantry Division (Mechanized) at Fort Carson, Colorado. The data were collected during January-March of 1978. The age of the participants ranged from 17 to 39 years with 63% between 20 and 25. Seven percent had some high school education, 61% were either high school graduates or had the GED equivalent, 25% had some college experience, and 7% were college graduates. Seventy-six percent had been with their unit for more than six months.

Instrumentation. The job satisfaction questionnaire contained 28 items written to describe the dimensions of: unit cohesiveness, training expectations, work satisfaction, career intentions, and leadership. The items designed to represent each dimension were grouped together to facilitate administration to this sample of soldiers. Five items described the soldier's attitude towards his work (Work Satisfaction); seven items described the soldier's attitude toward the cohesiveness of his unit (Unit Cohesiveness); three items described the soldier's attitude towards his career in the Army (Career Intentions); nine items described the soldier's attitude towards the current training exercises (Training Expectations); and four items described supervisor's leadership attitudes (Leadership). In addition, the questionnaire contained 10 demographic and six Army training experience items.

The respondents rated the questionnaire items on a five-point scale on which values ranged from "Strongly Agree" to "Strongly Disagree" (Work Satisfaction, Unit Cohesiveness, and Training Expectations), "Very likely" to "Very Unlikely" (Career Intentions), or "Extremely Well Trained" to "Extremely Poorly Trained" (one item of Training Expectation).

The questionnaire was constructed in a pretraining and posttraining form, which differed only in tense. A pilot test was conducted with a sample of 15 enlisted combat arms soldiers from Staff Sergeant to Private First Class, a sample that was part of the intended test population but was not part of the test sample. In addition, administration procedures and instructions were tried out and modified.

In summary, job satisfaction for all Army combat arms personnel consisted of four dimensions: Unit Cohesiveness, Training Expection,Work Satisfaction, and Career Intentions; and a Leadership scale was included for personnel in leadership positions.

Procedure. The training was conducted in a field environment at Fort Carson, Colorado, under the scheduling guidelines provided by the Army Test Schedule and Review Committee.

Prior to training, each combat arms unit received the pretraining job satisfaction questionnaire. Each combat arms unit consisted of 27 individuals. Administration consisted of seating the individuals, distributing the questionnaires and pencils, reading the standardized instructions, and collecting the completed questionnaires. Subsequently, the eight combat arms units were pretested to establish their tactical performance level and on the basis of their pretest scores assigned to either REALTRAIN training or conventional training. Upon completion of training each combat arms unit received a posttest to determine their tactical performance level. The day after the tactical performance posttest all individuals in each combat arms unit received the posttraining job satisfaction questionnaire. The administration was performed by the author and an additional researcher and the administration procedures were the same as utilized with the pretraining questionnaire administration.

Design. The design, as described by Campbell and Stanley (1963), was the pretest-posttest control group design with matched assignment to either REALTRAIN training or conventional training. The combat arms units were matched on the basis of pretest scores on tactical performance and then one unit of each matched pair was assigned to either REALTRAIN training or conventional training. The independent variable was type of training: REALTRAIN versus conventional. The dependent variables were four factors and a scale, described in the next section, which were obtained from a factor analysis and a scale construction of the job satisfaction items.

RESULTS

To isolate the dimensions of job satisfaction, a principal factor analysis with rotation to orthogonal simple structure according to Kaiser's Varimax criterion was applied to the correlation matrix of the pretraining responses to the 24 job satisfaction questionnaire items for the entire sample (N=187). The last four items were answered only by Army personnel in leadership positions (N=59) and therefore were not included in the factor analytic procedure.

On the basis of the initial factor analysis procedure three items were removed. The subsequent factor analysis procedure on the remaining 21 items supported the questionnaire construction representing the factors of: Unit Cohesiveness (the soldier's attitude toward his unit), Training Expectations (the soldier's attitude toward the similarity of the training to actual combat conditions), Work Satisfaction (the soldier's attitude toward his daily work activities), and Career Intentions (the soldier's attitude toward his Army future). The job satisfaction dimensions, the relevant questionnaire items for each dimension and the dimension definitions are described in Appendix A. Factor score coefficients were obtained for the rotated solution. The factor score coefficients, when applied to the standardized scores on the pretraining and posttraining responses produced a factor score for each factor. Therefore, each individual had four factor scores for the pretaining questionnaire responses, and four factor scores for the posttraining questionnaire responses.

A multivariate analysis of covariance was applied to the factor scores to test for the hypothesized significant effects of REALTRAIN training compared to conventional training on the four dimension of job satisfaction (Unit Cohesiveness, Training Expectations, Work Satisfaction, and Career Intentions) adjusting the posttest scores for any differences between the groups on the pretest scores.

Hotelling's trace criterion computed on the factor scores indicated an overall multivariate effect of training on the criterion variables adjusted for

the covariates, $F(16,706) = 39.96$, $p < .001$. Subsequent univariate analysis on the adjusted criterion variables indicated a significant effect of REALTRAIN which increased Unit Cohesiveness, $F(4,181) = 27.69$, $p < .001$ and Training Expectations, $F(4,181) = 19.73$, $p < .001$ and a significant effect of conventional training which increased Work Satisfaction, $F(4,181) = 40.52$, $p < .001$ and Career Intentions, $F(4,181) = 45.93$, $p < .001$. Table 1 indicates the adjusted means for each dimension across the training conditions and indicates the direction of the training effect.

Table 1

Dimension Means Adjusted for Covariates
Across the Training Conditions

Dimension	Adjusted $\bar{X}$ REALTRAIN	Conventional	Training Effect
Unit Cohesiveness	-.049	.068	RT
Training Expectations	-.197	.268	RT
Work Satisfaction	.077	-.106	CT
Career Intentions	.019	-.037	CT

Note. Lower values indicate more favorable response;
RT = REALTRAIN CT = conventional training.

An estimate of the strength of association between training and the adjusted criterion variables was computed. The estimated ω^2 indicated that training accounted for about 9.10% of the variance in Training Expectations; about 12.59% of the variance in Unit Cohesiveness; about 17.45% of the variance in Work Satisfaction; and about 19.37% of the variance in Career Intentions.

The job satisfaction questionnaire provided a Leadership scale, consisting of four items that was responded to only by soldiers in leadership positions (N=59). The Leadership dimension, the relevant questionnaire items and the dimension definition are described in Appendix B. A reliability test applied to the Leadership Scale indicated an alpha coefficient of .94 on the pretest responses and an alpha coefficient of .95 on the posttest responses.

A univariate analysis of covariance was applied to the posttest leadership scores taking into account the effect of the pretest leadership scores to assess the effects of REALTRAIN training when compared to conventional training.

The univariate analysis of covariance indicated no significant main effect between the REALTRAIN and conventional training groups on the dimension of Leadership, $F(1,56) = 1.143$, $p > .05$. The Leadership means adjusted for the covariate were 1.694 for the REALTRAIN group and 1.404 for the conventional group. The analysis of covariance summary Table is presented in Table 2.

Table 2

Analysis of Covariance Summary Table
for the Factor Training and the Covariate Leadership

Sources	SS	DF	MS	F	p
Covariate	19.775	1	19.775	19.096	<.001
Main Effects	1.184	1	1.184	1.143	>.05
Explained	20.959	2	10.479	10.120	<.001
Residual	57.990	56	1.036		
Total	78.949	58			

DISCUSSION

The results indicated that REALTRAIN significantly affected soldier's satisfaction with Unit Cohesiveness and Training when compared to conventional training and that conventional training significantly affected soldier's Work Satisfaction and Career Intentions when compared to REALTRAIN. Also, as indicated by the values of ω^2, the differences between the groups were of moderate strength for the dimension of Training Expectations and of strong strength for the dimensions of Unit Cohesiveness, Work Satisfaction, and Career Intentions. There was no significant effect of training on the satisfaction dimension of Leadership.

One reason that those in REALTRAIN reported higher unit cohesiveness than those in conventional training may be found in the manner in which the training exercises were reviewed. Conventional training provides a subjective critique of unit performance by senior military personnel well after the conclusion of training. On the other hand, REALTRAIN provides for an objective review of unit performance by all participants immediately following the training.

One reason for the significant effect of REALTRAIN on attitudes toward the dimension of Training Expectations may be that REALTRAIN procedures provide individuals with direct, ongoing results of their actions whereas conventional training provides minimum feedback to individual actions.

Finally, the significant effects of REALTRAIN compared to conventional training was supported by the tactical performance data. Scott, Meliza, Hardy, Banks,and Word (1979) reported REALTRAIN units accomplished significantly more missions, inflicted significantly more casualties, and sustained significantly fewer casualties after training compared to conventionally trained units.

The results indicated that REALTRAIN did not have a significant positive effect on Work Satisfaction. Although some studies have reported significant correlations between job satisfaction and performance, Motowidlo, Dowell, Hopp, Borman, Johnson, and Dunnette (1976) have reported that a review of twenty industrial studies indicated a median correlation of .14 between job satisfaction and measures of performance and suggested this had little or no theoretical or practical value. It is generally agreed that the relationship between job satisfaction and performance is a complex one and is influenced by other factors, many of which are outside the workplace, and are not consistently dealt with in previous research. Nevertheless, within the Army, there is widespread agreement by commanders that training in the field environment represents the work environment for combat arms personnel. In the context of this study, given the significant positive results of REALTRAIN on the dimensions of Unit Cohesiveness and Training, and on tactical performance, one would have thought that REALTRAIN would have a significant positive effect on Work Satisfaction.

These data may indicate that work encompasses more than the idea of field training for the combat arms soldier. The items relating to Work Satisfaction were asked in terms of the first person singular and the items relating to Unit Cohesiveness were asked in terms of the men in the unit. The indication is that training is a subset of work, not totally unlike industrial settings, and unit combat arms personnel, while satisfied with REALTRAIN, are not satisfied with their overall work, again not totally unlike industry.

The results indicated that REALTRAIN did not have a significant positive effect on attitudes toward the individual's Career Intentions. It may be that attitudes toward career are the direct result of attitudes toward work satisfaction as opposed to type of training received. This view is supported by the previously cited research and by a comprehensive review of the industrial literature conducted by Motowidlo et al. (1976) that indicated turnover to be consistently and unequivocally related to job satisfaction.

The results indicated no significant effect of training on the dimension of Leadership. One would have expected that preferred training, as reflected in tactical performance, would have led to differential attitudes on leadership, especially since the items were asked in terms of training. It may be simply that soldiers in supervisory positions perceived themselves as highly motivated and well trained in terms of their leadership roles and, as such, types of training have no effect.

Overall, REALTRAIN significantly improved tactical performance, attitudes toward training, and unit cohesion. However, REALTRAIN did not indicate a significant positive effect on attitudes toward career or work and therefore does not, in itself, appear to provide a basis for reducing combat arms personnel turnover.

This study implies there are factors outside the workplace that affect satisfaction and turnover. Indeed models have been proposed and studied in industry, e.g., Waters, Roach, & Waters, 1976, and the Army, e.g., Allen & Bell, 1980, which indicate factors outside the workplace have effects on satisfaction and turnover. In one well designed study, a general model of Army turnover indicated factors outside the workplace indirectly affected turnover through job satisfaction with job satisfaction directly effecting turnover (Bluedorn, 1979).

While turnover is a topic which has been studied for a long time, including work by Pitirim Sorokin (Sorokin and Anderson, 1932), no model of turnover has been developed for the U.S. Army Combat Arms.

Given the previous work with general models of turnover and the low retention rates of the combat arms relative to the Army, it is reasonable that research into the turnover issue be continued not only within the Army but more importantly within the combat arms.

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APPENDIX A

DESCRIPTION OF COMBAT ARMS JOB SATISFACTION DIMENSIONS

APPENDIX A

Description of Combat Arms Job Satisfaction Dimensions

Dimension	Questionnaire Items	Dimension Definition
Unit Cohesiveness[1] (7 items)	Men in the unit know how to get the job done right. If a man needs help, he can normally count on the men in the unit to help. The men in the unit are a good group to work with. Men of the unit work together as a team. Men of the unit help each other out. The unit does high quality work. The unit does more than enough work to get by.	Unit cohesiveness is a soldier's feeling about his unit described in terms of competence, cooperation, and the quantity and quality of work performed.
Training Expectations (7 items)	I expect that these training exercises will be like actual combat. I expect that these training exercises will make me realize the physical danger of combat duty. I expect that if this type of training exercise were made a regular part of Army training, more men would reenlist. I expect that these training exercises will improve my ability to perform my duties.	Training expectations is the soldier's feeling about combat training defined in terms of similarity to combat taking into account physical dangers of combat, improving combat duty performance, utilizing same unit skills used in combat increasing tactical learning, becoming combat ready, and improving

[1] For an additional discussion of cohesion see Tremble, T. R., Jr., Kerner-Hoeg, S., & Bell, D. B. Results of the New Manning System evaluation survey: First semi-annual report. (ARI Working Paper). Alexandria, VA: U.S. Army Research Institute, July 1983.

APPENDIX A (Continued)

Description of Combat Arms Job Satisfaction Dimensions

Dimension	Questionnaire Items	Dimension Definition
Training Expectations (continued)	I expect that my unit will learn more from this training compared to normal unit training. I expect that these training exercises will demand the same unit skills used in actual combat. I expect that this training will make my unit ready for combat duty.	the enlisted retention rate.
Work Satisfaction (5 items)	I like the day-to-day work that makes up my duty position. The people I work with make me want to work hard. The conditions I work under make me feel like doing my best. My day-to-day work makes me feel like I am doing something worthwhile. All in all, I am satisfied with my job in the Army.	Work satisfaction is the soldier's feeling about his work described in terms of his daily activities taking into account soldiers, conditions, sense of worth, and overall job satisfaction.
Career Intentions (2 items)	Will you reenlist in the Army? Will you make the Army a career?	Career intentions is the soldier's feeling about his Army future indicated by immediate (reenlistment) and long-range (career) intentions.

APPENDIX B

DESCRIPTION OF COMBAT ARMS LEADERSHIP DIMENSION

APPENDIX B

DESCRIPTION OF COMBAT ARMS LEADERSHIP DIMENSION

Dimension	Questionnaire Items	Dimension Definition
Leadership (4 items)	I expect that these training exercises will increase my willingness to help my men be informed about their duties. I expect that these training exercises will improve my ability to explain to my men what I want them to do. I expect that these training exercises will increase my willingness to explain to my men why a certain action is needed. I expect that these training exercises will increase my awareness of my men's abilities.	Leadership is that quality of a supervisor indicated by an ability, awareness, and willingness to explain actions and to understand subordinates.